

Claims

1. A system comprising a series of data carriers which are manufactured and thereafter issued for use, each of the data carriers having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, the diffraction structures presenting visually recognizable information which is identical for all data carriers of the system, wherein each of the data carriers of the system is provided with an alteration in a portion of the optically variable element, the alteration comprising a modification of the contour of the optically variable element, the alteration being affected prior to issuance of the data carrier.
2. A system comprising a series of data carriers which are manufactured and thereafter issued for use, each of the data carriers having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, the diffraction structures presenting visually recognizable information which is identical for all data carriers of the system, wherein each of the data carriers of the system is provided with an alteration in a portion of the optically variable element, the alteration comprising replacing the diffraction structure by nondiffractive structures in at least one partial area, the alteration being affected prior to issuance of the data carrier.
3. A system comprising a series of data carriers which are manufactured and thereafter issued for use, each of the data carriers having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, the diffraction structures presenting visually recognizable information which is identical for all data carriers of the system, wherein each of the data carriers of the system is provided with an alteration in a portion of the optically variable element, the alteration comprising a partial removal of at least one layer of the optically variable element, the alteration being affected prior to issuance of the data carrier and being different for each data carrier or subset of data carriers.

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4. The system of claim 3, wherein the optically variable element comprises a metal layer and the alteration comprises the partial removal said metal layer.
5. A system comprising a series of data carriers which are manufactured and thereafter issued for use, each of the data carriers having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, the diffraction structures presenting visually recognizable information which is identical for all data carriers of the system, wherein each of the data carriers of the system is provided with an alteration in a portion of the optically variable element, the alteration comprising a coloration of at least one layer of the optically variable element, the alteration being affected prior to issuance of the data carrier and being different for each data carrier or subset of data carriers.
6. The system of claim 5, wherein the optically variable element comprises a metal layer of inherent color, the color of the metal layer being different for each data carrier or subset of data carriers.
7. A system comprising a series of data carriers which are manufactured and thereafter issued for use, each of the data carriers having a body provided with a multilayer, optically variable element, said optically variable element comprising a metal layer and diffraction structures, the diffraction structures presenting visually recognizable information which is identical for all data carriers of the system, wherein each of the data carriers of the system is provided with a printed pattern, said printed pattern being partially overlapped by the optically variable element.
8. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the data carrier is provided with an alteration in a portion of the optically variable element, the

alteration comprising a modification of the contour of the diffraction structures,
the alteration being affected prior to issuance of the data carrier.

9. The data carrier of claim 8, wherein the contour of the optically variable element comprises symbols, characters, company logos, guilloche structures, line patterns, numbers or patterns.
10. The data carrier of claim 8, wherein the contour is provided in the form of a positive or negative print.
11. The data carrier of claim 8, wherein said data carrier has raised areas and wherein said alteration comprises the arrangement of said diffraction structures on said raised areas.
12. The data carrier of claim 8, wherein said data carrier has raised areas on a first surface and wherein said alteration comprises the arrangement of said diffraction structures on the opposite surface of said data carrier congruently to the areas located between said raised areas on the first surface of said data carrier.
13. The data carrier of claim 8, wherein said optically variable element comprises an at least partly permeable reflective layer.
14. The data carrier of claim 8, wherein said optically variable element or the data carrier comprises a metal layer of colored appearance.
15. The data carrier of claim 8, wherein the optically variable element comprises a metal layer designed as a fine screen.
16. The data carrier of claim 8, wherein at least one layer of the optically variable element is colored.
17. The data carrier of claim 16, wherein the layer of the optically variable element is colored with a substance comprising dyes, luminescent substances, transparent luminescent substances or absorbent substances.
18. The data carrier of claim 8, wherein the optically variable element comprises a printed pattern.

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19. The data carrier of claim 8, wherein the data carrier is provided with a printed pattern, said printed pattern being at least partially overlapped by the optically variable element.

20. The data carrier of claim 19, wherein the printed pattern comprises a transparent luminescent substance, luminescent substance or a substance reflective in the infrared spectral range.

21. The data carrier of claim 8, wherein the data carrier is provided with a printed pattern, said printed pattern being in alignment with the optically variable element.

22. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the data carrier is provided with an alteration in a portion of the optically variable element, the alteration comprising replacing the diffraction structures by nondiffractive structures in at least one partial area, the alteration being affected prior to issuance of the data carrier.

23. The data carrier of claim 22, wherein the optically variable element comprises a metal layer covering the diffraction structures and the nondiffractive structures.

24. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the data carrier is provided with an alteration in a portion of the optically variable element, the alteration comprising a partial removal of at least one layer of the optically variable element, the alteration being affected prior to issuance of the data carrier.

25. The data carrier of claim 24, wherein the optically variable element comprises a metal layer, the metal layer being partially removed.

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26. The data carrier of claim 24 or 25, wherein the alteration is affected by means of a laser beam.
27. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said optically variable element comprising a metal layer with a predetermined surface area and diffraction structures with a predetermined surface area, said diffraction structures presenting visually recognizable information, wherein the surface area of the metal layer is smaller than the surface area of the diffraction structures and surrounded by the diffraction structures.
28. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the data carrier is provided with an alteration in a portion of the optically variable element, the alteration comprising a coloration of at least one layer of the optically variable element, the alteration being affected with a substance comprising luminescent substances, phosphorescent substances, laser absorbent colors or laser absorbent additives.
29. The data carrier of claim 28, wherein the optically variable element comprises a protective lacquer layer and a thermoplastic layer which is provided with the diffraction structures in form of a relief structure, the protective lacquer layer or the thermoplastic layer being colored.
30. The data carrier of claim 28, wherein the coloration is affected by means of a laser.
31. The data carrier of claim 28, wherein the optically variable element comprises a metal layer with an inherent color.
32. The data carrier of claim 31, wherein the metal layer comprises copper, silver or gold.

33. A data carrier which is manufactured and thereafter issued for use, said data carrier having a body provided with a multilayer, optically variable element, said

optically variable element comprising a metal layer and diffraction structures, said diffraction structures presenting visually recognizable information, wherein the data carrier is provided with a printed pattern, said printed pattern being partially overlapped by the optically variable element.

34. A transfer band for transferring a multilayer optically variable element to a data carrier, the optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band is provided with an alteration in a portion of the optically variable element, the alteration comprising replacing the diffraction structures by nondiffractive structures in at least one partial area.
35. The transfer band of claim 34, wherein the transfer band comprises a metal layer covering the diffraction structures and the nondiffractive structures.
36. A transfer band for transferring multilayer optically variable elements to data carriers, the optically variable elements comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band is provided with an alteration in a portion of the optically variable elements, the alteration comprising a coloration of at least one layer of the optically variable elements, the alteration being different for each optically variable element or subset of optically variable elements.
37. The transfer band of claim 36, wherein the optically variable elements comprise a metal layer of inherent color, the color of the metal layer being different for each optically variable element or subset of optically variable elements.
38. A transfer band for transferring a multilayer optically variable element to a data carrier, the optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band is provided with an alteration in a portion of the optically variable element, the alteration comprising a coloration of at least one layer of the optically variable element, the alteration being affected with a substance

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39. The transfer band of claim 38, wherein the optically variable element comprises a protective lacquer layer and a thermoplastic layer which is provided with the diffraction structures in form of a relief structure, the protective lacquer layer or the thermoplastic layer being colored.
40. The transfer band of claim 38, wherein the coloration is affected by means of a laser.
41. The transfer band of claim 38, wherein the optically variable element comprises a metal layer with an inherent color.
42. The transfer band of claim 41, wherein the metal layer comprises copper, silver or gold.
43. A transfer band for transferring a multilayer optically variable element to a data carrier, the optically variable element comprising diffraction structures and a reflective layer structure, said diffraction structures presenting visually recognizable information, wherein at least a portion of the reflective layer structure is impermeable in the visible spectral range, but at least partly permeable in the invisible spectral range and wherein a pattern is disposed below a portion of the reflective layer structure, said pattern being recognizable in the invisible spectral range, but unrecognizable in the visual spectral range.
44. The transfer band of claim 43, wherein the reflective layer structure is permeable to infrared radiation.
45. The transfer band of claim 43, wherein the reflective layer structure comprises a metal layer designed as a fine screen.
46. The transfer band of claim 43, wherein the reflective layer structure comprises a layer which is opaque in the visual spectral range and permeable in the invisible spectral range and a metal screen or partly metallized layer, the opaque layer lying between the partly metallized layer or metal screen and the pattern.

40. The transfer band of claim 38, wherein the coloration is affected by means of a laser.

41. The transfer band of claim 38, wherein the optically variable element comprises a metal layer with an inherent color.

42. The transfer band of claim 41, wherein the metal layer comprises copper, silver or gold.

43. A transfer band for transferring a multilayer optically variable element to a data carrier, the optically variable element comprising diffraction structures and a reflective layer structure, said diffraction structures presenting visually recognizable information, wherein at least a portion of the reflective layer structure is impermeable in the visible spectral range, but at least partly permeable in the invisible spectral range and wherein a pattern is disposed below a portion of the reflective layer structure, said pattern being recognizable in the invisible spectral range, but unrecognizable in the visual spectral range.

44. The transfer band of claim 43, wherein the reflective layer structure is permeable to infrared radiation.

45. The transfer band of claim 43, wherein the reflective layer structure comprises a metal layer designed as a fine screen.

46. The transfer band of claim 43, wherein the reflective layer structure comprises a layer which is opaque in the visual spectral range and permeable in the invisual spectral range and a metal screen or partly metallized layer, the opaque layer lying between the partly metallized layer or metal screen and the pattern.

47. The transfer band of claim 43, wherein the pattern comprises a maschine readable code.

48. A transfer band for transferring multilayer optically variable elements to data carriers, the optically variable elements comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band comprises an adhesive layer for bonding the optically variable elements to the data carriers, the adhesive layer being provided in form of a pattern.

49. A transfer band for transferring a multilayer optically variable element to a data carrier, the optically variable element comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band is provided with an alteration in a portion of the optically variable element, the alteration comprising the removal or destruction of at least one layer of the optically variable element.

50. The transfer band of claim 49, wherein the optically variable element comprises a metal layer, the metal layer being partially removed.

51. The transfer band of claim 49, wherein the diffraction structures are partially destroyed.

52. The transfer band of claim 49, wherein all the layers of the optically variable element are partially removed or destroyed.

53. The transfer band of claim 49, wherein the alteration is carried out by means of a laser.

54. The transfer band of claim 49, wherein the partial removal or destruction is in the form of signs, characters or patterns.

55. The transfer band of claim 49, wherein the optically variable element comprises a metal layer with an inherent color.

56. The transfer band of claim 49, wherein at least one layer of the optically variable element is colored.

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57. The transfer band of claim 49, wherein the layer of the optically variable element is colored with a substance comprising dyes, luminescent substances, transparent luminescent substances or laser absorbent substances.

58. The transfer band of claim 49, wherein the optically variable element comprises a printed pattern.

59. The transfer band of claim 49, wherein the alteration comprises a perforation or punching.

60. A transfer band for transferring multilayer optically variable elements to data carriers, the optically variable elements comprising diffraction structures, said diffraction structures presenting visually recognizable information, wherein the transfer band is provided with an alteration in a portion of the optically variable elements, the alteration comprising a continuous numbering of the optically variable elements.

61. The transfer band of claim 60, wherein the numbering is provided by means of a number printing unit.

62. A method for producing a series of data carriers comprising the steps of forming a body for each data carrier in the series; forming a plurality of multilayer optically variable elements, each having diffraction structures, said diffraction structures presenting visually recognizable information; applying one of said optically variable elements to each of the data carriers; modifying the contour of the diffraction structures of each optically variable element during the formation of the optically element or the application of the optically variable element to the data carrier.

63. A method for producing a data carrier comprising the steps of forming a body for the data carrier; forming a plurality of multilayer optically variable elements, each having diffraction structures, said diffraction structures presenting visually recognizable information; applying one of said optically variable elements to each of the data carriers; modifying the contour of the diffraction structures of each

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optically variable element during the formation of the optically element or the application of the optically variable element to the data carrier.

64. The method of claim 63, wherein the optically variable element is produced as a transfer embossed element and wherein the modification is carried out during one of the production steps of the transfer band or the transfer of the element to the data carrier.

65. The method of claim 64, wherein the modification comprises the application of an adhesive layer in the contour of the diffraction structures so that only the areas provided with adhesive are transferred to the data carrier.

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66. The method of claim 63, wherein the transfer of the optically variable element is performed by a transfer die having a contact surface contacting the transfer band during the transfer of the optically variable element to the data carrier and wherein the modification comprises the modification of the contact surface.

67. The method of claim 63, wherein the data carrier is printed by steel intaglio printing causing raised areas and wherein only the raised areas of the printing are provided with the diffraction structures.

68. The method of claim 63, wherein the data carrier is printed by steel intaglio printing causing raised areas and wherein the diffraction structures are applied to the surface opposite the printing congruently to the areas located between said raised areas on the first surface of said data carrier.

69. A method for producing a transfer band comprising the step of applying to a carrier layer a multilayer structure of optically variable elements comprising diffraction structures, said diffraction structures presenting visually recognizable information; modifying the contour of the diffraction structures of each optically variable element during the formation of the multilayer structure.

70. The method of claim 69, wherein the diffraction structures are formed by the use of an embossing mold which is derived from a master structure and wherein the modification is performed during production of the embossing mold by

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